

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Safety and Enforcement Division
Rail Transit Safety Branch

Resolution ST-170
November 20, 2014

RESOLUTION

RESOLUTION ST-170 ORDERING THE ANGELS FLIGHT RAILWAY COMPANY TO FILE A SAFETY CERTIFICATION PLAN AND A SAFETY CERTIFICATION VERIFICATION REPORT UNDER THE PROVISIONS OF GENERAL ORDER 164-D.

Summary

This resolution affirms the requirement for the Angels Flight Railway Company to file a Safety Certification Plan and a Safety Certification Verification Report according to the requirements in General Order 164-D, and ratifies California Public Utilities Commission President Michael Peevey's directive by letter of November 8, 2013, to Angels Flight Railway Company.¹ The Safety Certification Plan must include a commitment to implement all the recommendations issued by the National Transportation Safety Board and subsequently directed by President Peevey. Prior to resuming revenue service, a Safety Certification Verification Report must be filed and approved according to General Order 164-D and as ordered herein.

Background

Angels Flight is a landmark funicular railway that was originally built in 1901 in the Bunker Hill region of downtown Los Angeles. Since 1997, Angels Flight has been effectively owned by the Angels Flight Railway Foundation (Foundation) through a 99-year long-term ground lease with the Community Redevelopment Agency of the City of Los Angeles

¹ Included as Attachment A.

(CRA/LA). The Angels Flight Railway Company (AFRC) operates Angels Flight on behalf of the Foundation.

Between 1901 and 1969, Angels Flight was owned by six different entities. CRA/LA was the eventual owner of Angels Flight and dismantled the funicular in 1969. In 1996, after 27 years of storage, CRA/LA oversaw the project to restore and reconstruct Angels Flight. The funicular was reopened to the public after being reinstalled two blocks south of its 1969 location. The track structure was rebuilt and the drive system was redesigned.

In 2001 the redesigned drive system failed, resulting in one of the cars rolling free down the 33-degree incline before colliding with the other car. Five passengers received serious injuries, two passengers received minor injuries, and one passenger died as a result of his injuries. Additionally, debris from the collision fell and injured a nearby pedestrian. The accident was thoroughly investigated by the California Public Utilities Commission (CPUC or Commission) and the National Transportation Safety Board (NTSB). The funicular was taken out of revenue service at this time.

One of the greatest concerns raised by the NTSB was that tests for metal particles in gear box oil were discontinued after an increased amount of metal in the oil was identified, in spite of a recommendation from the firm testing the oil to increase testing frequency because of the test results.² The gear failure that resulted from the accelerated wear indicated by the oil tests was the primary cause of the accident. The NTSB concluded that if the testing had been increased and the results appropriately recognized, the accident could have been prevented.³

In January 2007, AFRC personnel met with CPUC staff (Staff) to communicate their intent to refurbish and re-open Angels Flight. AFRC contracted engineering and manufacturing services to refurbish Angels Flight.

² National Transportation Safety Board, *Uncontrolled movement, collision, and passenger fatality on the Angels Flight Railway in Los Angeles, California, February 1, 2001*, NTSB/RAR-03/03, adopted August 5, 2003. p. 23. See also: http://www.kts-cb.com/angel_flight_accident.htm, last paragraph.

³ Ibid., pp. 37-38.

Angels Flight was once again reopened to the public in March 2010, with improved safety features that included a secondary safety cable, redundant fail-safe braking, and fail-safe carrier track brakes. The mechanical drive was once again redesigned, a state-of-the art controller was installed, and the entire system was refurbished in conformance with funicular standards (ANSI B77.2 – 2004) developed by the American National Standards Institute.

Discussion

Since the March 2010 reopening there have been three major maintenance and operational-related issues, including a derailment, which led to Staff directing AFRC to cease revenue service operations each time.

The first major issue occurred on June 17, 2010, when Staff discovered that Angels Flight was being operated when the end gates were not closing. Staff immediately directed Angels Flight to cease service until the end-gates were fixed and working as designed.⁴

The second major issue occurred on June 10, 2011, when Staff inspectors discovered excessive wheel flange wear during a routine inspection. Staff determined that continuing operations without providing mitigation was an unacceptable hazard that could lead to derailment, and directed AFRC to cease service.⁵ AFRC addressed the issue by replacing worn wheels, revising maintenance procedures to include detailed inspections of flange wear, and developing a condemnable flange wear limit that would specify when wheels needed replacement. AFRC was authorized to resume service operations by Staff on July 5, 2011.

The third major issue was a derailment that occurred on September 5, 2013, in which a downward moving Angels Flight car derailed. Several contributing factors were identified as causes of the derailment, including improper operating practices that bypassed safety functions of the

⁴ June 17, 2010, letter from CPUC Rail Transit and Crossing Branch Program Manager, Georgetta Gregory, to AFRC President John Welborne.

⁵ June 10, 2011, letter from CPUC Consumer Protection and Safety Division Director, Richard Clark, to AFRC President John Welborne.

funicular system, inadvertent carrier brake activation, and carrier brake design issues. The NTSB determined:

[The] probable cause of the September 5, 2013, accident was the intentional bypass of the funicular safety system with Angels Flight management knowledge; and Angel Flight management continuation of revenue operations despite prolonged, and repeated, unidentified system safety shutdowns.⁶

Angels Flight has been shut down since this derailment.⁷

This derailment was investigated jointly by Staff and NTSB personnel, who worked together with AFRC to develop a corrective action plan. Some individual components of the plan, as well as the number and critical nature of the tasks, define the work under the plan as “major projects” under the provisions of General Order 164-D.⁸ For example, the corrective action plan includes the redesign and installation of the carrier brake, start button reconfiguration, safety function reprogramming, fault logger reprogramming, replacement of wiring, operator training, better protection against passenger ejection, and construction of an evacuation walkway. We note that General Order 164-D requires a Safety Certification Plan (SCP) to be filed with the Commission when a project or projects of such magnitude are conducted, especially following an accident and a lengthy out-of-service period. General Order 164-D states:

Each RTA [Rail Transit Agency] shall prepare a Project specific Safety Certification Plan (SC Plan) for each of its Projects. Applicable FTA [Federal Transit Administration] guidelines shall be used as a reference.

⁶ National Transportation Safety Board, June 23, 2014, Railroad Accident Brief, *Angels Flight Railway Derailment*. p. 5.

⁷ September 6, 2013, letter from CPUC Deputy Director, Safety & Enforcement Division, Office of Rail Safety, Paul W. King, to AFRC President John Welborne.

⁸ See General Order 164-D, Section 2.12, Major Projects (Projects) means new rail systems or extensions, the acquisition and integration of new vehicles and safety critical technologies into existing service or major safety critical redesign projects, excluding functionally and technologically similar replacements. (Underlining added.)

Each RTA shall submit the SC Plan to Staff for review and Commission approval during the preliminary engineering phase. The RTA shall revise and expand the SC Plan as the Project progresses, as necessary. The RTA shall file any revision of the SC Plan with Staff. Within 45 calendar days, Staff shall approve or reject the proposed revisions.

We affirm that due to the nature and extent of new and modified technical and operational systems proposed, the AFRC corrective action plan should have been formalized in an SCP, yet it was not. Though the redesign and installation of the carrier brake, start button reconfiguration, safety function reprogramming, fault logger reprogramming, replacement of wiring, and operator training have been completed and reviewed, there still are major projects that have not been completed, as described below. Accordingly, we direct that an SCP be filed with the Commission that includes all the items in the corrective action plan, the NTSB's recommendations, and President Peevey's directive.⁹

The two issues that remain open were in response to the 2001 collision and passenger fatality – lack of end-gates that would effectively prevent ejection, and lack of an adjacent evacuation walkway. In the 2001 collision, a passenger was ejected and suffered serious injuries.¹⁰ An effective end-gate would have prevented his ejection, and likely would have minimized the extent of his injuries. Also, after the 2001 fatality, the NTSB concluded:

The absence of an emergency walkway hampered access by emergency responders to passengers in this accident, made difficult the evacuation of the injured, and increased the risk to both passengers and emergency responders.¹¹

⁹ General Order 164-D also requires that a Safety Certification Verification Report be filed with the Staff and approved before service is resumed. While General Order 164-D allows Staff to give provisional approval, in this instance, given the long and unsuccessful history of implementing engineering safety features and the NTSB recommendations, we will require formal Commission approval.

¹⁰ See National Transportation Safety Board, *Uncontrolled movement, collision, and passenger fatality*, p. 5. See also, <http://articles.latimes.com/2001/feb/03/local/me-20617> and <http://abcnews.go.com/US/story?id=94217>

¹¹ National Transportation Safety Board, *Uncontrolled movement, collision, and passenger fatality*, p. 43.

[The] probable cause of [the February 1, 2001] accident was the improper design and construction of the Angels Flight funicular drive and the failure of various organizations involved in that design and construction to ensure that the railway system conformed to initial safety design specifications and known funicular safety standards.¹²

Regarding the lack of end-gates and an adjacent walkway, the NTSB found that in contrast to the original 1993 engineering plans,¹³ which included a formal risk analysis, that CRA/LA successfully persuaded the engineering firms to drop both features, in spite of warnings such as the following for the walkway:¹⁴

Under California Government Code Section 835, a public entity is liable for injury caused by a dangerous condition of its property if the dangerous condition was created by a negligent or wrongful act or omission and failed to take appropriate measures to protect against the dangerous condition... a successful effort by others to override the Public Utilities Commission and/or the Fire Department on the need for the emergency staircase... would place the Community Redevelopment Agency in jeopardy.

After the reconstruction project was completed in March 2010, Staff authorized AFRC's return to operation. Immediately after revenue operations commenced, however, the NTSB informed Staff that the NTSB recommendations had not been implemented as intended. Debate amongst the three organizations on how the recommendations should be implemented would continue due to differences in the interpretation of the ANSI B77.2 Funicular standards.

The two safety issues that have not been completely resolved are the issues of passenger containment with effective end-gates, and emergency egress/ingress for passengers and emergency responders via an adjacent evacuation walkway. In letters dated May 18, 2010, December 29, 2010,

¹² National Transportation Safety Board, June 23, 2014, Railroad Accident Brief, p. 2.

¹³ Ibid., p. 15.

¹⁴ National Transportation Safety Board, *Uncontrolled movement, collision, and passenger fatality*, pp. 18-19.

and October 10, 2013, the NTSB clarified that its recommendations were for a track-adjacent emergency walkway with handrails and suitable structures that might be needed to get to the walkway (such as metal grating on the track-way) and for an end-gate at least 42 inches high or higher if deemed advisable by anthropometric design guidelines.¹⁵ This clarification was repeated in President Peevey's November 8, 2013, letter to the NTSB Chairman. In a May 13, 2014, letter replying to President Peevey, the NTSB Acting Chairman responded in agreement.¹⁶

This resolution affirms our concurrence with the NTSB's recommendations and President Peevey's directives, and directs that the SCP must contain plans for constructing those safety enhancements, and be submitted for our approval. We ratify President Peevey's November 8, 2013, letter (See Attachment A).

Additionally, because of the long and unsuccessful efforts to ensure that all NTSB recommendations are implemented, we require formal Commission approval of the Safety Certification Verification Report before Angels Flight is allowed to resume revenue service. Also because of the history of systemic safety problems, and the fact that the NTSB has opposed AFRC's proposed alternatives, which could be deemed "workarounds" to the NTSB's recommendations, and because the NTSB has approved the CPUC's response without such alternatives or workarounds, we conclude that workarounds or open items will not be appropriate in this case. We will not allow any such workarounds or open items in our approval to resume passenger service, and instead require full implementation of all NTSB recommendations and CPUC directives.

Notice

On October 21, 2014, this Resolution was published on the Commission's Daily Calendar.

¹⁵ NTSB Acting Chairman Deborah A. P. Hersman's October 10, 2013, letter to President Peevey (NTSB Safety Recommendation 14-004) summarizes these recommendations and is included herein as Attachment B.

¹⁶ Staff subsequently received a copy of an August 27, 2014, letter from AFRC President John Welborne to NTSB's Railroad Division Chief, and three August 28, 2014, letters from engineering firms. These letters reargue the end-gate and walkway issues that the NTSB and President Peevey's letters have already resolved.

Comments

The draft resolution of the Safety and Enforcement Division in this matter was mailed in accordance with Section 311 of the Public Utilities Code and Rule 14.2(c) of the Commission's Rules of Practice and Procedure.

Editorial corrections were received from Angels Flight Railway Company and are addressed in this resolution. No other comments were received.

Therefore, IT IS ORDERED that:

1. The Angels Flight Railway Company shall file a Safety Certification Plan that adopts the recommendations of the National Transportation Board in its October 10, 2013, letter, and the directives of California Public Utilities Commission President Peevey in his November 8, 2013, letter.
2. This resolution ratifies California Public Utilities Commission President Peevey's directives regarding the Angels Flight Railway Company in his November 8, 2013, to the National Transportation Safety Board, and the Angels Flight Railway Company shall implement those directives, without workarounds, as described in President Peevey's letter, prior to resuming revenue service.
3. The Angels Flight Railway Company shall not resume revenue service operations without filing a Safety Certification Verification Report, which must receive formal approval from this Commission before service is resumed.

This resolution is effective today.

I certify that this resolution was adopted by the Public Utilities Commission at its regular meeting held on November 20, 2014. The following Commissioners voting favorably thereon:

PAUL CLANON
Executive Director

Attachment A

November 8, 2013, letter from Michael R. Peevey, President, CPUC
To
NTSB Chairman Deborah A. Hersman

Attachment B

October 10, 2013, letter from Acting Chairman Deborah A. P. Hersman
(NTSB Safety Recommendation 14-004)
To
Michael R. Peevey, President, CPUC